

REMARKS

By the present Amendment, Applicant has amended claims 11, 12, 15, 17 to more appropriately define the invention. Upon entry of this Amendment, claims 1-19 are pending, with claims 1-10 being withdrawn from consideration as drawn to a non-elected invention.

In the Office Action, the Examiner rejected claims 11-17 under 35 U.S.C. § 103(a) as being unpatentable over Hotta et al. (U.S. Patent No. 5,846,477) in view of Ohta (U.S. Patent No. 6,444,492). The Examiner also objected to claims 18-19 as being dependent upon a rejected base claim, but stated that they would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicant appreciates the indication of allowable subject matter, and respectfully traverses the rejection under 35 U.S.C. § 103(a), because a *prima facie* case of obviousness has not been established by the Examiner.

To establish a *prima facie* case of obviousness under 35 U.S.C. §103(a), each of three requirements must be met. First, the reference or references, taken alone or combined, must teach or suggest each and every element recited in the claims. Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references in a manner resulting in the claimed invention. Third, a reasonable expectation of success must exist. Moreover, each of the three requirements must "be found in the prior art, and not be based on applicant's disclosure." See M.P.E.P. §2143, 8th ed., February 2003.

The present invention is directed to a semiconductor resin mold and a semiconductor resin molding method. Particularly, claim 11 recites “[a] semiconductor resin molding method of sealing a mount portion of a semiconductor chip on a resin tape substrate with a resin molded body excluding a back surface of the resin tape substrate, said method comprising: preparing a mold comprising a cavity having a plurality of suction holes connectable to a suction system in an attachment surface to which said resin tape substrate is attached, the plurality of suction holes being grouped into a first group of suction holes and a second group of suction holes; attaching said resin tape substrate to the attachment surface of the cavity of said mold; sucking/fixing said resin tape substrate to the attachment surface of said cavity after attaching said resin tape substrate to the attachment surface by first sucking the resin tape substrate through the first group of suction holes and then sucking the resin tape substrate through the second group of suction holes after a lapse of a predetermined time interval; and supplying a resin into the cavity of said mold after the step of sucking/fixing said resin tape substrate onto the attachment surface.”

On the contrary, Hotta et al. discloses a production method for encapsulating a semiconductor device, wherein a semiconductor element is encapsulated with a resin. See Hotta et al., ABSTRACT. Hotta et al. particularly describes three examples in its disclosure (col. 5, line 50 - col. 9, line 4), which are illustrated in detail in Figs. 3(A)-3(E), 4(A)-4(E), and 5(A)-5(F). As shown in these figures, semiconductor elements (23, 33, and 53, respectively) are encapsulated by resin (24, 34, and 54, respectively) to form semiconductor devices (26, 36, and 17, respectively). Clearly, Hotta et al. only teaches a method of encapsulating semiconductor devices, rather than “[a] semiconductor resin

molding method of sealing a mount portion of a semiconductor chip on a resin tape substrate with a resin molded body excluding a back surface of the resin tape substrate,” as recited in claim 11.

In addition, the Examiner correctly recognized that Hotta et al. “does not teach the use of a tape substrate.” Office Action, page 3. Accordingly, Hotta et al. also fails to teach or suggest at least “preparing a mold comprising a cavity having a plurality of suction holes connectable to a suction system in an attachment surface to which said resin tape substrate is attached, the plurality of suction holes being grouped into a first group of suction holes and a second group of suction holes; attaching said resin tape substrate to the attachment surface of the cavity of said mold; sucking/fixing said resin tape substrate to the attachment surface of said cavity after attaching said resin tape substrate to the attachment surface,” as recited in claim 11 (emphasis added).

Further, Applicant submits that Hotta et al. does not teach or suggest anywhere in its disclosure at least “first sucking the resin tape substrate through the first group of suction holes and then sucking the resin tape substrate through the second group of suction holes after a lapse of a predetermined time interval,” as recited in claim 11.

In addition, Ohta fails to overcome the gross deficiencies of Hotta et al. Ohta discloses a method for mounting a semiconductor device by holding a flexible tape substrate or other flat and stable board through a suction means. See Ohta, ABSTRACT. Ohta fails to teach or suggest at least “preparing a mold comprising a cavity having a plurality of suction holes connectable to a suction system in an attachment surface to which said resin tape substrate is attached, the plurality of suction holes being grouped into a first group of suction holes and a second group of suction

holes; attaching said resin tape substrate to the attachment surface of the cavity of said mold; sucking/fixing said resin tape substrate to the attachment surface of said cavity after attaching said resin tape substrate to the attachment surface by first sucking the resin tape substrate through the first group of suction holes and then sucking the resin tape substrate through the second group of suction holes after a lapse of a predetermined time interval; and supplying a resin into the cavity of said mold after the step of sucking/fixing said resin tape substrate onto the attachment surface,” as recited in claim 11. At least on this basis, claim 11 is patentable over Hotta et al. in view of Ohta.

Applicant also wishes to traverse the Examiner’s allegation that “[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to encapsulate a semiconductor tape substrate by using vacuum means directly to the tape substrate as shown in [Ohta], when performing the molding process set forth in [Hotta et al.].” Office Action, page 3. Applicant respectfully disagrees for the following reasons.

Hotta et al.’s invention is aimed at solving a problem in prior art that a semiconductor device must be released from a mold by using an eject pin. Hotta et al., col. 1, lines 29-37. Particularly, with the use of a pair of PTFE films 21 (col. 6, lines 15-18), semiconductor devices kept between the PTFE films “can be taken out from the mold together with the films, and therefore, eject pins may not equip to the mold.” Hotta et al., col. 9, lines 51-54. Clearly, the use of the PTFE films is indispensable to Hotta et al.’s invention. Thus, contrary to the Examiner’s allegation, it is impossible to use “vacuum means **directly** to the tape substrate as shown in [Ohta].” Office Action, page

3, emphasis added. In other words, Hotta et al. actually teaches away from the using of a tape substrate and, therefore, one skilled in the art would not have been motivated to combine Ohta's teachings with Hotta et al. to result in Applicant's claimed invention. Nor would there have been any reasonable expectation of success in doing so, in view of such a teaching-away reference.

In view of the above, Applicant submits that claim 11 is patentable over Hotta et al. and Ohta, and claims 12-19, which depend from claim 11, are also patentable at least because of their dependency from allowable claim 11.

Finally, regarding claims 15-17, the Examiner alleged that Hotta et al. teaches "wherein each mold section is optionally connected to different vacuum sources," referring to col. 8, lines 25-30 of Hotta et al. Office Action, page 4. Applicant respectfully disagrees. Hotta et al. merely teaches that "the space side formed between each film 41 or 42 and each mold 13 or 14 is sucked by an external suction source." Hotta et al., col. 8, lines 23-25, emphasis added. Clearly, Hotta et al. only teaches the use of one external suction source, rather than two. Even assuming, *arguendo*, that there is an option to use two independent vacuum means, which Applicant would not concede, one skilled in the art would not be motivated to use two because doing so would only increase the complexity of the apparatus based on Hotta et al.'s disclosure. The Federal Circuit has repeatedly stated that "there is no basis for concluding that an invention would have been obvious solely because it is a combination of elements that were known in the art at the time of the invention. Instead, the relevant inquiry is whether there is a reason, suggestion, or motivation in the prior art that would lead one of ordinary skill in the art to combine the references, and that would also suggest a

reasonable likelihood of success.” *Smiths Industries, Medical Sys., Inc. v. Vital Signs, Inc.*, 183 F.3d 1347, 1356, 51 USPQ2d 1415, 1420 (Fed. Cir. 1999). Hotta et al. clearly lacks such a reason, suggestion, or motivation for one skilled in the art to make use of “two independent vacuum means,” as alleged by the Examiner. Office Action, page 4.


In view of the foregoing remarks, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims 1-19.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Dated: April 2, 2004

By: 
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*With limited recognition under 37 C.F.R. § 10.9(b)